CLAIMS:

1. An alloy which comprises:

| | | |
|---|---|---|
| Si | : | 6.5 - 7.5 wt% |
| Fe | : | up to 0.20 wt% |
| Cu | : | up to 0.05 wt% |
| Mn | : | up to 0.05 wt% |
| Mg | : | 0.35 to 0.50 wt% |
| Zn | : | up to 0.05 wt% |
| Ti | : | up to 0.20 wt% |

Balance : Al and other components, the other components comprise a total of not more than 0.15 wt% and any single component of the other components does not exceed 0.05 wt%, the alloy having a microstructure which includes a primary aluminium-containing matrix and one or more iron-containing phases dispersed in the matrix, and wherein the sole or predominant iron-containing phase is β phase that formed as a transformation product of π phase.

2. The alloy defined in claim 1, wherein when the alloy includes more than one iron-containing phase, the iron-containing phases also include π phase.

3. The alloy defined in claim 2, wherein the π phase is up to 30 vol% of the iron-containing phases.

4. The alloy defined in ~~any one of the preceding claims~~ claim 1, wherein the Mg content of the alloy is 0.40-0.45 wt%.

5. A method for manufacturing an alloy article which comprises:

(a) providing a melt having a composition of:

| | | |
|---|---|---|
| Si | : | 6.5 - 7.5 wt% |
| Fe | : | up to 0.20 wt% |
| Cu | : | up to 0.05 wt% |
| Mn | : | up to 0.05 wt% |
| Mg | : | 0.35 to 0.50 wt% |
| Zn | : | up to 0.05 wt% |
| Ti | : | up to 0.20 wt% |

Balance : Al and other components, the other components comprising a total of not more than 0.15wt% and any single component of the other components not exceeding 0.05 wt%,

(b) casting said melt and solidifying a casting at a cooling rate that produces a microstructure of an aluminium-containing matrix and π and β iron-containing phases dispersed in the matrix;

(c) solution heat treating the casting to at least partially transform π phase to β phase; and

(d) quenching the casting to form the alloy article.

6. The method defined in claim 5, wherein the cooling rate is sufficient to produce a dendrite arm spacing in the matrix of between 10 and 45μm.

7. The method defined in claim 5 ~~or claim 6~~, wherein the sole or predominant iron-containing phase in the alloy article is β phase.

8. The method defined in claim 5, wherein when the alloy includes more than one iron-containing phase in

the alloy article, the iron-containing phases also include π phase.

9. The method defined in claim 8, wherein the π phase is up to 30 vol% of the iron-containing phases.

10. The method defined in claim 5 ~~or claim 6,~~ wherein the step of solidifying the casting produces iron-containing phases that include a substantial proportion of π phase and the subsequent solution heat treatment step is effective to convert a majority of the π phase to β phase to give a microstructure in the alloy article that includes iron-containing phases which are predominantly β phase.

11. The method defined in ~~any one of claims 5 to 10,~~ claims wherein prior to casting the melt is at a temperature above the liquidus temperature of the alloy.

12. The method defined in ~~any one of claims 5 to 11,~~ claims wherein the quenching step is in hot water having a temperature of 70-80°C.

13. The method defined in ~~any one of claims 5 to 12,~~ claims further ~~includes~~ including an ageing heat treatment of the alloy article.

14. The method defined in claim 13, wherein the ageing heat treatment includes heating the alloy article to a temperature of 140-170°C, holding the alloy article at that temperature for 1-10 hours, and air cooling the alloy article to room temperature.

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